

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

Claims 23 and 25-34 are pending. Claims 23 and 25-34 are rejected. Claim 24 is allowed.

Claims 23 and 33 have been amended. No claims have been cancelled. No claims have been added. Support for the amendments is found in the specification, the drawings, and in the claims as originally filed. Applicant submits that the amendments do not add new matter. Applicants note with appreciation the Examiner's allowance of claim 24.

Rejections Under 35 U.S.C. § 103

Claims 23, 25, 26, 27, 28, 29, 30, 31, 32 and 33-34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,903,058 to Akram ("Akram"), in combination with U.S. Patent No. 6,130,170 to David et al. ("David") and U.S. Patent No. 4,455,199 to Enomoto ("Enomoto").

Applicants have amended claim 23 to particularly out that a metal second layer that includes copper is disposed above and on the metal adhesion first layer. A metal third layer that includes nickel-vanadium is disposed above and on the metal second layer.

Akram discloses a conductive bump on a die. More specifically, Akram discloses that under bump metallurgy includes a Ti as a first metal layer 68, TiW as a second metal layer 70, and copper for the third layer 72 (a Ti/TiW/Cu stack) (Figure 2e, col. 6, lines 4-18). Thus, Akram merely discloses a Ti/TiW/Cu stack, in contrast to a metal third layer that includes NiV composition deposited above and on the second layer that includes copper deposited above and on deposited the metal adhesion first layer, as recited in amended claim 23.

David discloses the seed layer for Ball Limiting Metallurgy (BLM). More specifically, David discloses that the seed layer includes a chromium copper (CrCu) or nickel-vanadium (NiV) second layer deposited on the first layer of Cr, or titanium-tungsten (TiW). The third layer of copper is deposited on the second layer of CrCu or NiV (col. 3, lines 5-16). Thus, David merely discloses the third layer of Cu deposited on NiV second layer on the first layer of TiW, in contrast to a metal third layer that includes NiV composition deposited above and on the second layer that includes copper deposited above and on deposited the metal adhesion first layer, as recited in amended claim 23.

Enomoto merely discloses the timepiece display. The timepiece display has a second metal layer having a tensile stress deposited on a first metal layer having a compressive stress.

Consequently, even if Akram, David, and Enomoto were combined, such a combination would lack the discussed limitations of amended claim 23.

Therefore, Applicants respectfully submit that amended claim 23 is not obvious under 35 U.S.C. § 103(a) over Akram, in view of David, and further in view of Enomoto.

Given that claims 25-32 depend from amended claim 23 and add additional limitations, Applicants respectfully submit that claims 25-32 are likewise not obvious under § 103 (a) over Akram in view of David.

Applicants have amended claim 33 to include a copper stud disposed above and on the metal second layer of copper. An electrically conductive bump is disposed above and on the copper stud.

Akram merely discloses a solder bump 82 deposited onto the UBM metallurgy that includes metal layers 68, 70, 72 (Figure 2e, col. 6, lines 4-39), in contrast to an electrically conductive bump disposed above and on a copper stud above and on the metal second layer of copper, as recited in amended claim 33.

David merely discloses a solder bump deposited onto a BLM metallurgy that is composed of several metal layers (col. 2, line 60- col. 3, line 35), in contrast an electrically conductive bump disposed above and on a copper stud above and on the metal second layer of copper, as recited in amended claim 33.

Enomoto, similarly to Akram and David, fails to disclose the discussed limitations of amended claim 33.

Consequently, even if Akram, David, and Enomoto were combined, such a combination would lack the discussed limitations of amended claim 33.

Therefore, Applicants respectfully submit that amended claim 33 is not obvious under under 35 U.S.C. § 103(a) over Akram, in view of David, and further in view of Enomoto.

Conclusion

It is respectfully submitted that in view of the amendments and arguments set forth herein, the applicable rejections and objections have been overcome. If there are any additional charges, please charge Deposit Account No. 02-2666 for any fee deficiency that may be due.

Respectfully submitted,

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